

## Solid State Portable Headlight System REF 46070, 46072, 46074, 46076 46070R, 46072R, 46074R, 46076R



### Symbol Descriptions



**Attention:** Consult user's Manual for additional information



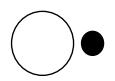
Double Insulation



**INTENSE LIGHT:** Lamp is bright. Do not stare at the lamp when in use. May be harmful to eyes.



Lamp On



Lamp Off

### Warnings & Cautions



**ATTENTION:** Read Operating Manual for Warnings, Cautions, and Instructions for Use.



**IPX0:** Not protected against the ingress of water.



**WARNING:** Solid State Portable Headlight is not suitable for use in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide. An explosion may result.



**INTENSE LIGHT:** Lamp is bright. Do not stare at the lamp when in use. May be harmful to eyes.



**USE ONLY:**  
Solid State Portable Headlight Power Source/Battery Charger and rechargeable battery pack supplied by Welch Allyn.



There are no user-serviceable parts inside the device except the rechargeable batteries and headband. Contact the Authorized Service Center listed at the end of this document for further assistance.

### Guidelines for the safe use of the Solid State Portable Headlight



General practices to minimize risk of harm to the skin from optical radiation hazards include: minimizing illumination intensity at the tissue examination site, minimizing exposure times, and taking additional precautions when skin sensitivity has been altered through tissue trauma or the use of anesthesia. General good practices to minimize risk of harm to the eyes from optical radiation hazards include: Avoiding looking at bright light sources and their reflections, and protect eyes where normal pupil sizes and aversion responses are not present.

### Introduction

Thank you for purchasing the Solid State Portable Headlight by Welch Allyn, the worldwide leader in illuminated medical diagnostic instrumentation. By following the use and care guidelines supplied in this owner's manual, you will enjoy years of dependable, trouble-free service from your new headlight.

This headlight is designed to meet the various needs of a physicians' office, hospital environment, and wherever compact, portable, direct illumination is critical.

### Components

#### Standard Parts List

Solid State Portable Headlight and Power Cord/Charger



Rigid Headband model:  
46070R (Domestic)  
46072R (European)  
46074R (U.K.)  
46076R (Australia)



Terrycloth Headband model:  
46070 (Domestic)  
46072 (European)  
46074 (U.K.)  
46076 (Australia)

#### Accessory Parts List



Model 05232-U Soft Case

#### Replacement Parts List

When ordering replacement parts for your Solid State Portable Headlight, please use the following numbers



Model 49642 Soft Terrycloth Headband – case of 10

Model 72270 Rechargeable Battery



Direct Power Source/Charger:  
Model 74170 Domestic  
Model 74172 European  
Model 74174 U.K.  
Model 74176 Australia

### Set-up and Operation Instructions for Use

The Solid State Portable Headlight consists of a Portable Headlight with soft terry cloth or rigid headband and a charger/direct power source. The Solid State Portable Headlight is designed to operate off the battery or direct power source. The headlight is provided fully assembled to operate in the portable operation mode. **All headlights are shipped with the batteries discharged.** Charge the batteries prior to use. Once the unit is charged, turn the power switch, located at the top of the luminaire, to the on position. To operate the headlight using the direct power source, insert the charger/direct power source (REF 74170) into the input port located on the top of the luminaire (see photo below). To charge the battery pack, connect the charger/direct power source (REF 74170) into the top of the luminaire (see photo below). To adjust the spot size, rotate the front section of the luminaire.

Use the Solid State Portable Headlight to provide illumination while performing a number of activities in the physician's office, hospital, or emergency environment such as minor suturing, general exam, and foreign body removal.

**NOTE** Follow the assembly instructions listed below and the corresponding photographs.



### Maintenance

Each month examine cords and connections. The user can perform battery and/or headband replacement on an as needed basis. Return the unit to an authorized Welch Allyn Technical Service Department or distributor for additional servicing. See "Service and Warranty Information" section.

#### Battery Charging

The fully drained battery will reach a 90% charge retention in approximately three hours of continuous charging. This is approximately 25% longer if the charging is happening at a temperature less than 15° C. Proportional usage will require a proportional charge time such as if the product is used for 15 minutes, charge the battery for 45 minutes to reach a 90% capacity. Overnight charging brings the battery to its 100% full capacity.

Charging the unit while operating will significantly increase the charge time to over 12 hours to obtain a 90% charge level.

This battery pack does not exhibit any memory problems that exist with NiCad batteries. However, like other products where batteries are used, remove the battery from the product when the product is in storage or when not in use for extended periods beyond 6 months. If the battery is left in the product for extended periods of time, the battery will drain down to an unusable level and require charging prior to use.

### Battery Replacement



Drop the battery pack into the luminaire visor and plug into the connector.

### Headband Replacement



On/Off Switch

Holding the luminaire with the on/off switch in the up position, place the visor section of the luminaire into the openings located in the front section of the terry cloth headband.

### Cleaning (Recommended monthly)

**NOTE** Excess solution entering the luminaire assembly could damage internal components. Use caution to ensure cloth is not saturated with solution.

1. Unplug the unit prior to cleaning.
2. Wipe down the entire luminaire with a cloth slightly dampened with a mild solution of detergent. The terry cloth headband is removable and is machine washable.
3. Do not operate the light until the light is thoroughly dry.

**NOTE** Do not sterilize the unit.

**CAUTION:** Do not immerse in cleaning solutions.

### Troubleshooting

Trouble Area	Possible Cause	Corrective Action
No Light Output	Dead battery or battery not connected properly	Verify that the unit operates on direct power source. If yes, insure that the battery is connected properly; refer to the battery replacement section for instructions on connecting the battery. If the battery is connected properly, recharge or replace battery
Low Light Output	Low charge on battery	Verify that the unit operates on direct power source. If yes, recharge or replace battery

### Specifications

#### Electrical

Ref Model	Input Voltage	Output Voltage	Leakage Current
46070	120VAC ± 50/60 Hz	5 volts vdc	<10 uA
46072	230VAC ± 50/60 Hz	5 volts vdc	<10 uA
46074	230VAC ± 50/60 Hz	5 volts vdc	<10 uA
46076	240VAC ± 50/60 Hz	5 volts vdc	<10 uA

## Emissions and Immunity Information

Guidance and Manufacturer's Declaration - Emissions

The REF 46000 is intended for use in the electromagnetic environment specified below. The customer or user of the REF 46000 should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance		
RF Emissions CISPR11	Group 1	The REF 46000 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.		
RF Emissions CISPR11	Class B			
Harmonics IEC 61000-3-2	Class A			
Flicker IEC 61000-3-3	Complies			
		The REF 46000 is suitable for use in all establishments, including domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.		
<b>Radiated and Conducted Emissions were tested on the FRIWO 15.1504 power supply. It complies with the EN55022 Class B limits; same limits as EN55011 Group 1, Class B. Harmonics and Flicker testing were performed on a REF 46000 with a 230 VAC FRIWO 15.1504 power supply.</b>				
Guidance and Manufacturer's Declaration - Immunity				
The REF 46000 is intended for use in the electromagnetic environment specified below. The customer or user of the REF 46000 should ensure that it is used in such an environment.				
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance	
ESD IEC 61000-4-2	± 6kV Contact ± 8kV Air	± 8kV Contact ± 15kV Air	Floors should be wood, concrete, or ceramic tile. If floors are synthetic, the r/h should be at least 30%.	
EFT IEC 61000-4-4	±2kV Mains ±1kV I/Os	±2kV	Mains power quality should be that of a typical commercial or hospital environment.	
Surge IEC 61000-4-5	±1kV Differential ±2kV Common	±2kV ±2kV	Mains power quality should be that of a typical commercial or hospital environment.	
Voltage Dips/ Dropout IEC 61000-4-11	>95% Dip for 0.5 Cycle  60% Dip for 5 Cycles  30% Dip for 25 Cycles  >95% Dip for 5 Seconds	>95% Dip for 0.5 Cycle  60% Dip for 5 Cycles  30% Dip for 25 Cycles  >95% Dip for 5 Seconds	Mains power quality should be that of a typical commercial or hospital environment.	
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.	

ESD, EFT, and Surge testing were performed on the FRIWO 15.1504 power supply at 100 and 240 VAC. Voltage Dips were tested at 100 and 240 VAC and Magnetic Immunity was tested at 50 and 60 Hz. A REF 46000 was connected for both Voltage Dips and Magnetic Immunity testing.

Guidance and Manufacturer's Declaration - Immunity

The REF 46000 is intended for use in the electromagnetic environment specified below. The customer or user of the REF 46000 should ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 Vrms (Outside ISM) 10Vrms (In ISM Bands) 150 kHz to 80MHz	10 Vrms 10 V/m	Portable and mobile communications equipment should be separated from the REF 46000 by no less than the distances calculated/listed below:  D=0.35 (Sqrt P) D=1.2 (Sqrt P) D=0.35 (Sqrt P) 80 to 800 MHz  Where P is the max power in watts and D is the recommended separation distance in meters.  Field strengths from fixed transmitters, as determined by an electromagnetic site survey, should be less than 10Vrms or 10V/m.  Interference may occur in the vicinity of equipment containing a transmitter.
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.5 GHz		

Conducted RFI and Radiated RFI testing was performed on a FRIWO 15.1504 power supply, monitoring the output for drops in voltage; none were detected.

Recommended Separations Distances between portable and mobile RF Communications equipment and the REF 46000

The REF 46000 is intended for use in the electromagnetic environment in which radiated disturbances are controlled. The customer or user of the REF 46000 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment and the REF 46000 as recommended below, according to the maximum output power of the communications equipment.

Max Output Power (Watts)	Separation (m) 150kHz to 80MHz Non-ISIM D=(3.5/V1) (Sprt P)	Separation (m) 150kHz to 80MHz ISIM D=(12/V2) (Sprt P)	Separation (m) 80 to 800MHz D=(3.5/E1) (Sprt P)	Separation (m) 800MHz to 2.5GHz D=(7/E1) (Sprt P)
0.01	0.035	0.12	0.035	0.07
0.1	0.111	0.379	0.111	0.221
1	0.35	1.2	0.35	0.7
10	1.107	3.795	1.107	2.214
100	3.5	12.0	3.5	7.0

## Dimensions

Headband Adjustment Range

Small, Medium, Large

## Illumination System

1 watt Solid State Lamp

Color Temperature 5500 Degree Kelvin  
20 Lumens  
LED life > 10,000 hours  
Working distance 16 inches  
Spot size range 1.5 to 6 inches at the working distance

## Weight

4 ounces

## Environment

Operating:

32°F - +104°F (0°C - +40°C)  
75% RH Max continuous  
500 hPa - 1060 Altitude

Storage/Transport:

-4°F - +120°F (-20°C +49°C)  
95% RH Max continuous  
500 hPa - 1060 Altitude

## Equipment Classification

Class II, Continuous Operation

IPX0: Not protected against the ingress of water

Category: Not AP/APG Equipment

This device complies with current required standards for electromagnetic interference, and should not present problems to other equipment or be affected by other devices. As a precaution, avoid using this device in close proximity to other equipment.

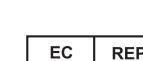
## Approvals



CERTIFIED TO: CAN/CSA STD C22.2 NO. 601.1  
CONFORMS TO: IEC 60601-1, IEC 60601-1-2, UL STD 60601-1, AS/NZS 3200.1



The CE mark on this product indicates that it has been tested to and conforms with the provisions noted within the 93/42/EEC Medical Device Directive.



Regulatory Affairs Representative  
Welch Allyn Limited  
Navan Business Park  
Dublin Road  
Navan, County Meath, Republic of Ireland



Complies with EMC Framework of Australia



UL Recognized US/Canada  
UL2601-1, CAN/CSA C22.2 No. 601.1



VDE Certified  
IEC 60601-1, EN 60601-1, VDE 0750

## Warranty

Instrumentation purchased new from Welch Allyn, Inc. (Welch Allyn) is warranted to be free from original defects in material and workmanship under normal use and service for a period of one year for the Solid State Portable Headlight from the date of first shipment from Welch Allyn. This warranty shall be fulfilled by Welch Allyn or its authorized representative repairing or replacing at Welch Allyn's discretion, any such defect, free of charge for parts and labor.

Welch Allyn should be notified via telephone of any defective product and the item should be immediately returned, securely packaged and postage prepaid to Welch Allyn. Loss or damage in shipment shall be at the purchaser's risk.

Welch Allyn will not be responsible for loss associated with the use of any Welch Allyn product that (1) has had the serial number defaced, (2) has been repaired by anyone other than an authorized Welch Allyn Service Representative, (3) has been altered, or (4) has been used in a manner other than in accordance with the instructions.

## Service Information

For Technical Support or to obtain return instructions, please contact the nearest Welch Allyn service center listed below:

### USA Customers

Phone: +1 315 685 4560  
or +1 800 535 6663  
(North America Only)

### Canada Customers

Phone: 905 890 0004  
or +1 800 561 8797  
(North America Only)

### INTERNATIONAL Customers

#### Welch Allyn Germany

Tel: +49 695 098 5132

#### Welch Allyn Ltd. Singapore

Tel: +65 6419 8100

#### Welch Allyn Latin America

Tel: +1 305 669 9003

#### Welch Allyn Australia

Tel: +61 2 9638 3000

#### Welch Allyn UK Ltd.

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